

-- IN THE CLAIMS --

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) A method for identifying an interacting set of ~~molecules~~ proteins comprising:

A) generating first and second fragments of a fluorescent protein reporter molecule which have a directly fluorescent detectable activity when reconstituted and/or associated;

B) coupling said first fragments of said fluorescent protein reporter molecule to members of a first panel of ~~molecules~~ proteins;

C) coupling said second fragments of said fluorescent protein reporter molecule to members of a second panel of ~~molecules~~ proteins;

D) mixing the products of B) and C);

E) directly testing for fluorescence of said fluorescent protein reporter molecule when reconstituted and/or associated; and

F) identifying the protein panel members whose interaction resulted in fluorescence of said fluorescent protein reporter molecule and which thus form an interacting set.

2. (currently amended) A method for identifying an interacting set of ~~molecules~~ proteins comprising:

A) identifying a first panel and a second panel of ~~molecules~~ proteins whose mutual interaction is desired to be tested;

B) coupling ~~molecules~~ proteins of said first panel to first fragments of a fluorescent protein reporter molecule;

C) coupling ~~molecules~~ proteins of said second panel to second fragments of said fluorescent protein reporter molecule; wherein said first and second fragments have no fluorescent activity prior to step (D)

D) mixing the products of B) and C);

E) directly testing for fluorescent activity of said fluorescent protein reporter molecule ; and

F) identifying the protein panel members whose interaction resulted in said fluorescent activity and which thus form an interacting set.

3. (currently amended) A method of screening multiple panels of ~~molecules~~ proteins against each other to determine the ability of individual protein panel members to interact with each other, said method comprising:

A) coupling first fragments and second fragments of a fluorescent protein reporter molecule to different protein panel members; wherein said first and second fragments have no detectable activity;

B) mixing the products of A);

C) testing for said fluorescent protein reporter molecule activity; and

D) identifying the protein panel members whose interaction results in said fluorescent protein reporter molecule activity and which thus form interacting members.

4. (currently amended) A method according to any of Claims 1-3 where at least two of said panels comprise a library of ~~molecules~~ proteins.

5. (currently amended) A method according to any of Claims 1-3 where at least one of said panels comprises a library of ~~molecules~~ proteins.

6. (withdrawn) A method comprising directly or indirectly introducing different interacting sets into separate cell populations and identifying an interacting set that provides its host cells with a growth advantage relative to cells containing a different set.

7. (withdrawn) A method comprising directly or indirectly introducing different interacting sets into separate cell populations and identifying an interacting set that provides its host cells with a quantifiable signal that is greater than the signal generated by a different set.

8. (currently amended) A method of preparing an assay system comprising:

A) identifying a first panel of ~~molecules~~ proteins and a second panel of ~~molecules~~ proteins whose mutual interaction is desired to be tested;

B) coupling molecules of said first panel of proteins to first fragments of a fluorescent protein reporter molecule; and

C) coupling molecules of said second panel of proteins to second fragments of said fluorescent protein reporter molecule wherein said first and second fragments have no detectable fluorescent activity.

9. (withdrawn) An assay system comprising a first panel of molecules coupled to first fragments of a fluorescent protein reporter molecule and a second panel of molecules coupled to second fragments of said fluorescent protein reporter molecule wherein said first and second fragments have no detectable activity.

10. (withdrawn) A composition comprising at least one compound produced according to step B) of Claim 8 and at least one compound produced according to step C) of Claim 8.

11. (currently amended) A method for identifying interacting ~~molecules~~ proteins comprising:

(A) generating fragments of a fluorescent protein reporter molecule, said fragments having a directly detectable activity when associated;

(B) coupling first fragments of said fluorescent protein reporter molecule to members of a panel of ~~molecules~~ proteins;

(C) coupling a second fragment of said fluorescent protein reporter molecule to a second ~~molecule~~ protein;

- (D) mixing the products of B) and C);
- (E) directly testing for said fluorescent protein reporter molecule activity; and
- (F) identifying the panel of protein members whose interaction with said second ~~molecule~~ protein resulted in said fluorescent protein reporter molecule activity.

12. (currently amended) A method for identifying interacting ~~molecules~~ proteins comprising:

- (A) identifying a panel of ~~molecules~~ proteins and identifying a second ~~molecule~~ protein whose interaction with members of said panel is desired to be tested;
- (B) coupling members of said panel of proteins to first fragments of a fluorescent protein reporter molecule;
- (C) coupling the second ~~molecule~~ protein to a second fragment of said fluorescent protein reporter molecule wherein said first and second fragments have no detectable fluorescent activity;
- (D) mixing the products of B) and C);
- (E) directly testing for said fluorescent protein reporter molecule activity; and
- (F) identifying the panel of protein members whose interaction with said second ~~molecule~~ protein resulted in said fluorescent protein reporter molecule activity and which thus form interacting ~~molecules~~ proteins.

13. (currently amended) A method of screening a first ~~molecule~~ protein against a panel of ~~molecules~~ proteins to determine the ability of said first ~~molecule~~ protein to interact with individual members of said panel of proteins comprising:

A) coupling a first fragment of a fluorescent protein reporter molecule to said first ~~molecule~~ protein;

B) coupling second fragments of said fluorescent protein reporter molecule to different members of said panel of proteins wherein said first and second fragments have no detectable fluorescent activity;

C) mixing the products of A) and B);

D) testing for fluorescent activity of said fluorescent protein reporter molecule; and

E) identifying the members of said panel of proteins whose interaction with said first ~~molecule~~ protein results in said fluorescent protein reporter molecule fluorescent activity and which thus interact with said first ~~molecule~~ protein.

14. (currently amended) A method according to any of Claims 11-13 wherein said panel comprises a library of ~~molecules~~ proteins.

15. (withdrawn) A method comprising directly or indirectly introducing different interacting molecules into separate cell populations and identifying those interacting molecules that provide their host cells with a growth advantage relative to cells containing different molecules.

16. (withdrawn) A method comprising directly or indirectly introducing different interacting molecules into separate cell populations and identifying those interacting molecules that provides

their host cells with a quantifiable signal that is greater than the signal generated by different molecules.

17. (currently amended) A method of preparing an assay system comprising: (A) identifying a panel of ~~molecules~~ proteins whose interactions with a second ~~molecule~~ protein are desired to be tested; (B) coupling members of said panel of proteins to first fragments of a fluorescent protein reporter molecule; and (C) coupling said second ~~molecule~~ protein to a second fragment of said fluorescent protein reporter molecule wherein said first and second fragments have no detectable fluorescent activity.

18. (withdrawn) An assay system comprising a panel of molecules coupled to first fragments of a fluorescent protein reporter molecule and a second molecule coupled to a second fragment of said fluorescent protein reporter molecule.

19. (withdrawn) A composition comprising at least one compound produced according to step B) of Claim 17 and at least one compound produced according to step C) of Claim 17.

20. (currently amended) A method for identifying interacting ~~molecules~~ proteins comprising: (A) generating fragments of a fluorescent protein reporter molecule which have a directly fluorescent detectable activity when associated; (B) coupling a first fragment of said fluorescent protein reporter molecule to a first ~~molecule~~ protein; (C) coupling a second fragment of said fluorescent protein reporter molecule to a second ~~molecule~~ protein; (D) mixing the products of

B) and C); and (E) directly testing for fluorescent activity of said fluorescent protein reporter molecule in the absence or presence of one or more chemical or biological compounds.

21. (currently amended) A method for identifying interacting ~~molecules~~ proteins comprising:

A) identifying a first ~~molecule~~ protein and a second ~~molecule~~ protein whose interaction is desired to be tested;

B) coupling said first ~~molecule~~ protein to a first fragment of a fluorescent protein reporter molecule;

C) coupling said second ~~molecule~~ protein to a second fragment of said fluorescent protein reporter molecule wherein said first and second fragments have no detectable fluorescent activity;

D) mixing the products of B) and C);

E) directly testing for fluorescent activity of said fluorescent protein reporter molecule.

22-23 (canceled)

24. (currently amended) A method of preparing an assay system comprising:

A) identifying a first ~~molecule~~ protein and a second ~~molecule~~ protein whose interaction is desired to be tested;

B) coupling said first ~~molecule~~ protein to a first fragment of a fluorescent protein reporter molecule; and

C) coupling said second ~~molecule~~ protein to a second fragment of said fluorescent protein reporter molecule wherein said first and second fragments have no detectable fluorescent activity.

25. (withdrawn) An assay system comprising a first molecule coupled to a first fragment of a fluorescent protein reporter molecule and a second molecule coupled to a second fragment of said fluorescent protein reporter molecule wherein said first and second fragments have no detectable activity.

26. (withdrawn) A composition comprising at least one compound produced according to step B) of Claim 24 and at least one compound produced according to step C) of Claim 24.

27. (withdrawn) A composition comprising one or more interacting molecules as identified by a method according to any of Claims 1-3, 6-8, 11-13, 15-17, 20-21, and 24.

28. (withdrawn) Cells containing interacting molecules as identified by a method according to any of Claims 1-3, 6-8, 11-13, 15-17, 20-21, and 24.

29. (canceled)

30. (currently amended) A method according to any of Claims 1-3, 8₁-9, 11-13, 17₁-18, 20-21, and 24-25 wherein said fluorescent protein reporter molecule generates an optically detectable signal.

31. (currently amended) A method according to any of Claims 1-3, 8₁-9, 11-13, 17₁-18, 20-21, and 24-25 wherein said reporter molecule generates a fluorescent signal.

32. (currently amended) A method according to any of Claims 1-3, 8₁-9, 11-13, 17₁-18, 20-21, and 24-25 wherein said fluorescent protein reporter molecule generates a signal that can be quantified within living cells.

33. (currently amended) A method according to any of Claims 1-3, 8₁-9, 11-13, 17₁-18, 20-21, and 24-25 wherein said fluorescent protein reporter molecule generates a signal that can be localized within living cells.

34 - 36 (canceled)

37. (currently amended) A method according to any of Claims 1-3, 8₁-9, 11-13, 14, 17₁-18, 20-21, and 24-25 wherein the fluorescent protein reporter molecule activity is detected by one or more methods selected from the group consisting of: cell color, fluorescence, optical density, spectroscopy, flow cytometry, microscopy, or image analysis.